

What is claimed is:

1. A vehicle front body structure, comprising:

a pair of longitudinal structural members;

5 a front compartment formed inside the longitudinal structural members;

a power unit connected to the longitudinal structural members and placed in the front compartment; and

10 an impact load transfer mechanism formed outside the front compartment and changes the impact load direction to a lateral direction for transmitting the impact load to the longitudinal structural member and the power unit directly.

2. The vehicle front body structure of claim 1,

15 wherein the longitudinal structural members comprises a pair of side members arranged on left and right sides of the front compartment to extend in the fore-and-aft direction of the vehicle, the side members each having a reinforcing part for mounting the power unit,

20 wherein the vehicle front body structure further comprises a bumper reinforcement connected with the front ends of the side member to extend in the width direction of the vehicle,

wherein the impact load transfer mechanism comprises:

25 a side-member front area arranged in front of the reinforcing part to incline outwardly in the width direction as directing ahead of the vehicle, the side-member front area being provided with a strength control mechanism that controls a strength of the side member so that the

maximum stress generated in the front part of each one of imaginary sections continuing in the longitudinal direction of the side member becomes more than or close to the maximum stress generated in the rear part of the each one of imaginary sections;

5           a sub-side member arranged so as to extend from the vicinity of the reinforcing part toward the front of the vehicle, substantially straight to an extension of a side-member rear area, the sub-side member connected to the bumper reinforcement at a front end; and

10           a deformation-mode control mechanism that allows the sub-side member to be deformed inwardly in the width direction of the vehicle due to the impact load, thereby to render the sub-side member interfere with the power unit.

3.    The vehicle front body structure of claim 2, wherein

15           the side-member front area has its front end detachably connected with the bumper reinforcement, while the sub-side member has its front end fixed with the bumper reinforcement integrally, and

20           the sub-side member has its rear end detachably connected with a connecting part between the side-member front area and the side-member rear area.

4.    The vehicle front body structure of claim 2, wherein

25           the side-member front area is formed in a different body from the side-member rear area, while the rear end of the side-member front area is detachably connected with the vicinity of the reinforcing part, and

          the sub-side member is formed in one body with the side-member

rear area.

5. The vehicle front body structure of claim 2, wherein

the reinforcing part at the front end of the side-member rear area

5 has a curved part formed to incline outwardly in the width direction of the vehicle,

the side-member front area is separated from the front end of the curved part by a plane perpendicular to the longitudinal direction of the curved part,

10 the side-member front area is detachably connected to the curved part, and

the rear end of the sub-side member is also detachably connected to the curved part.

15 6. The vehicle front body structure of claim 5, wherein

the sub-side member is connected with the curved part of the side-member rear area by two bolts penetrating the curved part vertically,

one of the two bolts is positioned in the rear part of the curved part, at a position close to the inside face of the curved part in the width

20 direction of the vehicle, and

the other one of the two bolts is positioned in the front part of the curved part, at a position close to the outside face of the curved part in the width direction of the vehicle.

25 7. The vehicle front body structure of claim 2, wherein the deformation-mode control mechanism includes:

first notches formed, in the vicinity of the rear end of the sub-side member, on upper and lower ridgelines thereof respectively, inside in the width direction of the vehicle; and

second notches formed on upper and lower ridgelines of the sub-side member, outside in the width direction of the vehicle, the second notches being forwardly apart from the first notches at a predetermined distance each.

8. The vehicle front body structure of claim 2, wherein the deformation-mode control mechanism includes:

a third vertical notch formed, in the vicinity of the rear end of the sub-side member, on an inside face thereof in the width direction of the vehicle, the third notch swelling outwardly in the width direction of the vehicle; and

a fourth vertical notch formed on an outside face of the sub-side member, in the width direction of the vehicle, the fourth vertical notch swelling inwardly in the width direction of the vehicle, the fourth vertical notch being forwardly apart from the third notch at a predetermined distance.

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9. The vehicle front body structure of claim 2, wherein the deformation-mode control mechanism includes the sub-side member comprising:

an inclined part formed to incline inwardly in the width direction of the vehicle, the inclined part extending from the rear end of the sub-side member forwardly by a predetermined distance; and

a continuous part formed to be connected to the inclined part forwardly, the continuous part being paralleled with the fore-and-aft direction of the vehicle or inclined outwardly in the width direction of the vehicle.

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10. The vehicle front body structure of claim 2, wherein the power unit is provided with a projection that can engage with a deformation peak part of the sub-side member being folded inwardly in the width direction of the vehicle by a collision input.

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11. The vehicle front body structure of claim 2, further comprising a sub-frame connected to the vicinities of supporting points of the longitudinal structural member mounting the power unit thereon.

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12. A vehicle front body structure, comprising:

a pair of longitudinal structural members;

a front compartment formed inside the longitudinal structural members;

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a power unit connected to the longitudinal structural members and placed in the front compartment; and

impact load transfer means for changing the impact load direction to a lateral direction for transmitting the impact load to the longitudinal structural member and the power unit directly, the impact load transfer means formed outside the front compartment.

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